## **CLAIMS:**

What is claimed is:

- 1 1. A method comprising:
- identifying a communication capability of a remote device; and
- dynamically generating a virtual channel within an Ethernet channel over a
- 4 communication link between a communication interface and the remote device, wherein a data
- rate of the virtual channel is selected based, at least in part, on the identified communication
- 6 capability of the remote device.
  - 2. A method according to claim 1, wherein the communication link is an 802.3ae compliant communication link, with a data channel of 10Gb/s.
  - 3. A method according to claim 1, wherein identifying a communication capability of the remote device comprises:
    - sending a capability request; and
- receiving a response to the request denoting at least the communications capability of the remote device.
- 4. A method according to claim 1, wherein identifying a communication capability of the remote device comprises:
- receiving an indication from the remote device denoting at least the communications
  capability of the remote device.

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- 5. A method according to claim 4, wherein the indication also denotes a processing capability of the remote device.
- 6. A method according to claim 1, wherein at least the communication capability of the remote device is obtained by the communication interface through a negotiation process.
- 7. A method according to claim 1, wherein dynamically generating the virtual channel within a physical Ethernet channel comprises establishing a sub-10Gb/s virtual data channel within a physical 10Gb/s data channel based, at least in part, on the identified communication capability of the remote device.
  - 8. A method according to claim 7, further comprising:

    identifying a processing capability of the remote device by the communication interface;

    and

modifying a virtual channel data rate based, at least in part, on the identified processing capability of the remote device.

- 9. A method according to claim 7, wherein establishing the virtual channel comprises:

  parsing the physical channel into a plurality of timeslots based, at least in part, on the identified communication capability of the remote device; and
- assigning one or more of the plurality of generated timeslots to carry substantive content as the virtual channel, while remaining timeslots do not carry substantive content.

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- 1 10. A method according to claim 9, wherein substantive content is content associated with a communication session between the communication interface and the remote device.
- 1 11. A method according to claim 9, wherein parsing the physical channel comprises:

  determining a fraction of the physical channel required to support the virtual channel; and
  timeslicing the physical channel into a number of timeslots, each timeslot corresponding
  to the fraction.
- 12. A method according to claim 9, wherein parsing the physical channel comprises: timeslicing the physical channel into a predetermined number of timeslots.
  - 13. A method according to claim 9, wherein parsing the physical channel comprises: timeslicing the physical channel into ten (10) timeslots, each associated with roughly a 1Gb/s communication rate.
  - 14. A method according to claim 7, wherein establishing the virtual channel comprises: selecting one or more 1Gb/s media access controller(s) (MAC) or a 10Gb/s MAC with which to establish the virtual channel; and
- dynamically multiplexing either the 1Gb/s MAC(s) or the 10Gb/s MAC to an appropriate one or more channel(s) of an attachment unit interface (AUI).
- 15. A method according to claim 14, the attachment unit interface comprising:

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- at least four (4) 10Gb/s attachment unit interface (XAUI) channel(s), wherein content
- from up to two (2) 1Gb/s MAC(s) are selectively routed through each of the four XAUI channels
- such that each XAUI channel supports virtual channels of 1Gb/s resolution.
- 1 16. A storage medium comprising content which, when executed by an accessing computing
- appliance, causes the appliance to implement a scalable network interface to establish a virtual
- channel within a physical Ethernet channel based, at least in part, on at least an identified
- 4 communication capability of a remote network element.
  - 17. A storage medium according to claim 16, wherein the physical Ethernet channel is a 10Gb/s data channel, while the virtual channel is a sub-10Gb/s data channel, wherein a size of the virtual channel is selected to correspond with the identified communication capability of the remote network element.
  - 18. A storage medium according to claim 16, the scalable network interface comprising negotiation feature(s) to identify one or more of a communication capability of a remote device and a processing capability of a remote device.
- 1 19. A storage medium according to claim 16, wherein the scalable network interface
- establishes a virtual channel by parsing the physical Ethernet channel into a number of timeslots,
- wherein the number is derived from the identified communication capability of the remote
- 4 device.

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- 1 20. A storage medium according to claim 16, wherein the scalable network interface
- establishes a virtual channel by dynamically selecting between one or more 1Gb/s media access
- 3 controller(s) (MAC) or a 10Gb/s MAC, and dynamically routes content from the selected
- 4 MAC(s) through one or more attachment unit interface (AUI) channel(s), as appropriate.
- 21. An apparatus comprising:

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- control logic, to identify a communication capability of a remote device communicatively

  coupled with the apparatus through a communication link; and
  - a media access controller (MAC), responsive to the control logic, to selectively parse the physical data channel into a number of timeslots and populate only a subset of timeslots with substantive data associated with a communication session with the remote device to create a virtual channel within the physical channel when the identified communication capability of the remote device is less than that of the physical channel.
  - 22. An apparatus according to claim 21, wherein the control logic invokes auto-negotiation feature(s) to identify at least the communication capability of the remote device.
  - 23. An apparatus according to claim 21, wherein the number of timeslots is predetermined.
- An apparatus according to claim 21, wherein the MAC derives the number of timeslots required from the identified communication capability of the remote device.
  - 25. An apparatus according to claim 21, wherein the MAC is a 10Gb/s MAC.

26. An apparatus comprising:

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- 2 control logic, to identify a communication capability of a remote device communicatively
- 3 coupled with the apparatus through a communication link; and
- a plurality of media access controller (MAC) types, responsive to the control logic,
- switchably selected by the control logic to establish a 10Gb/s physical channel, or a sub-10Gb/s
- δ virtual channel within the 10Gb/s physical channel to facilitate communication from the
- apparatus to the remote device based, at least in part, on the identified communication capability
- 8 of the remote device.
  - 27. An apparatus according to claim 26, further comprising:
  - an attachment unit interface (AUI), switchably coupled with the MAC(s), the AUI having
  - four (4) 10Gb/s attachment unit interface (XAUI) channels, each channel supporting up to
  - 2.5Gb/s communication rates which are aggregated to provide the 10Gb/s physical channel.
  - 28. An apparatus according to claim 27, wherein the plurality of MAC(s) include 1Gb/s
  - MAC(s), and wherein one or more 1Gb/s MAC(s) are dynamically selected to establish a sub-
- 3 10Gb/s virtual channel within the 10Gb/s physical channel.
- 1 29. An apparatus according to claim 28, wherein up to two 1Gb/s MAC(s) are switchably
- 2 coupled to a XAUI channel, wherein when so switchably coupled each XAUI channel selectively
- provides 1Gb/s virtual channel resolution within the 10Gb/s physical channel.